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PATENT ABSTRACTS OF JAPAN

(11)Publication number : **10-079882**

(43)Date of publication of application : **24.03.1998**

(51)Int.Cl.

HO4N 5/232

(21)Application number : **08-231686**

(71)Applicant : **CANON INC**

(22)Date of filing : **02.09.1996**

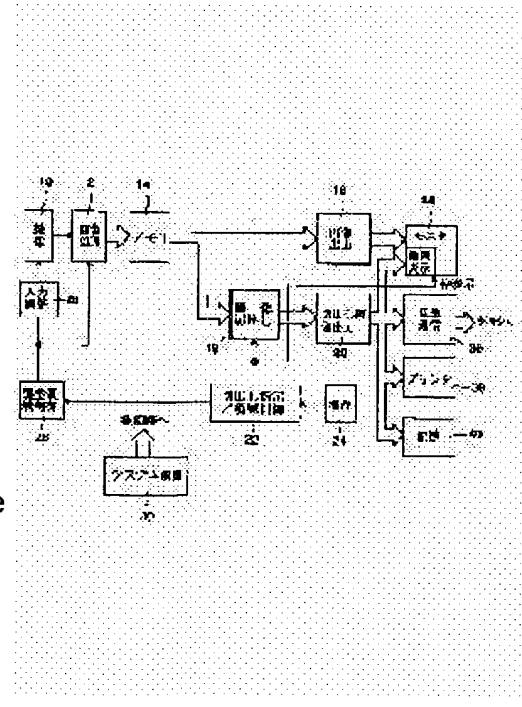
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(54) IMAGE INPUT DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a cut image after proper input adjustments (≥ 1 of e.g. focus adjustment, exposure adjustment, and color adjustment) without forcing an operator to perform troublesome operation by making various input adjustments of a cutting area when an input image is cut.

SOLUTION: An image-pickup circuit 10 converts an optical image into an electric signal. An image processing circuit 12 digitally processes the output image signal of an image-pickup circuit 10 and stores the result in a memory 14. A user specifies ≥ 1 cutting area on a screen through an operation device 24. A cutting indication/area control circuit 22 indicates the execution of a cutting process for the specified range to an image cutting circuit 18, which reads image data within the specified range out of the memory 14 and supplies the data to a cut image output circuit 20. An adjustment area control circuit 28 commands an input-adjusting circuit 26 to adjust the focus and exposure as to the specified cutting range, according to a control signal from the circuit 22 and commands an image processing circuit 12 to adjust the white balance in the specified cutting range.



LEGAL STATUS

[Date of request for examination]

26.11.2002

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] More specifically, this invention relates to the picture input device for incorporating a dynamic image and a static image to information processors, such as a personal computer, about a picture input device.

[0002]

[Description of the Prior Art] In recent years, the environment where a high definition color static image can be easily treated with a document, a color drawing, a photograph, etc. in high-performance-izing of a personal computer and multimedia-izing, and a list with colorization and high-resolution-izing of a printer, a monitor display, etc. of an output unit is ready. Moreover, development of a picture compression coding technique and the spread of digital telecommunication circuits are remarkable, and terminals including various multimedia communication, such as TV conference system which uses a personal computer as the base, are proposed.

[0003] As a means to input a dynamic image and a static image into a personal computer, the electronic camera using a solid state image sensor has spread widely with image - which reads manuscript paper, and a scanner. Although many about 410,000-pixel CCD solid state image sensors currently used for the camcorder/movie of 8mm method etc. are used for it since the diffusion rate is highly cheap to an electronic camera, the electronic camera which uses a still high resolution image sensor is also commercialized. For example, in the 1,600,000-pixel CCD image sensor, about 988 pixels of 1536 pixel x perpendiculars of horizontals are realized as an effective pixel.

[0004] The image information incorporated by the personal computer is outputted from a printer, shines, and compression coding is carried out, it is displayed on a monitor or it is transmitted [and] through a communication line. [that various storages, such as a hard disk, memorize] However, the maximum resolution (pixel number) not necessarily always is not necessarily required, and required image size changes with an application, use gestalten, etc. in many cases.

[0005] When the input image shown in drawing 3 is explained to an example, there is a case where he wants to specify the specific field 112,114 and to transmit outside by using only the image in the field as a dynamic image, for example, displaying all of the input images 110 on monitor display. Moreover, the image of a field 116 is cut down and the case where he wants to accumulate or printer output is in a hard disk.

[0006]

[Problem(s) to be Solved by the Invention] In the conventional picture input device, focus control, diaphragm adjustment, white balance adjustment, etc. are performed independently [the field 110,112,114 specified as transmission or logging]. Therefore, at every assignment of a field 110,112,114, the user readjusted the focus etc., and when there was nothing, he did not become, so that the specified field 110,112,114 might be suited.

[0007] For example, when the field made into the object of transmission was changed from a field 112 to a field 114 in the example shown in drawing 3 , actuation of changing a focus location into the

photographic subject in a field 114 from the photographic subject in a field 112 had to be carried out. When you forget this actuation, after the focus has suited the photographic subject in a field 112, the image in a field 114 will be transmitted.

[0008] For this reason, many burdens were placed for the operator, transmitted the image which it is not only user-unfriendly, but is not to the point and which faded, brightness and the image whose color balance is not enough were accumulated, and there was a case where it printed.

[0009] This invention aims at showing the picture input device which does not produce such un-arranging.

[0010] This invention aims at showing the picture input device which adjusts appropriately a focus, exposure, color balance, etc. of the image within the specified limits, without needing complicated actuation of an operator again.

[0011]

[Means for Solving the Problem] An image input means by which the picture input device concerning this invention changes an optical image into the picture signal of an electrical signal, A block-definition means to specify the logging field of the input image information inputted by the image input means concerned, The image logging means which was specified by the block-definition means concerned from the input image information concerned inputted by the image input means concerned and which starts and cuts down the image of a field, A processing means to process the image of the field started by the image logging means concerned apart from the input image information for the one screen concerned, An adjustment zone-control means to determine the input adjustment object domain in the image input means concerned according to the logging field concerned specified by the block-definition means concerned, It is characterized by having an input adjustment means to perform input adjustment in the image input means concerned to the coordination area concerned determined by the adjustment zone-control means concerned. Input adjustments are focus control, exposure adjustment, and color adjustment.

[0012] By such configuration, at the time of logging activation of an image, since input adjustment is performed to a logging image, the logging image which performed optimal input adjustment can be obtained.

[0013]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained to a detail with reference to a drawing.

[0014] Drawing 1 shows the outline configuration block Fig. of one example of this invention. The image pick-up circuit possessing the image sensor from which 10 changes a taking lens and an optical image into an electrical signal, 12 carries out A/D conversion of the output picture signal of the image pick-up circuit 10. Various kinds of image processings The image-processing circuit (which for example, performs a gamma correction, color balance adjustment, etc.), The memory which 14 possesses the memory capacity for at least 1 screen, and memorizes the output image data of the image-processing circuit 12, The image output circuit which outputs outside the image data 16 is remembered to be by memory 14, and 18 The image logging circuit which starts a part of ***** memorized by memory 14, the logging image output circuit which outputs outside the image with which 20 was started by the image logging circuit 18, and 22 They are the logging directions / field control circuit which controls the logging field of the image logging circuit 18 according to the signal from the operating set 24 which a user operates. An operating set 24 becomes pointing devices, such as a keyboard and/or a mouse, and a list from the software of a graphical user interface.

[0015] The input equalization circuit where 26 adjusts the image input condition (a focus and exposure) of the image pick-up circuit 10, and 28 are adjustment zone-control circuits which order the input equalization circuit 26 and the image-processing circuit 12 the field which should adjust an input condition according to the signal which shows logging directions / control circuits 22-1, or two or more appointed fields.

[0016] 30 is a system control circuit which supervises the operating state of each part and controls whole actuation and timing.

[0017] As for the monitor display whose 34 possesses an animation processing facility, the transmission communication device with which 36 outputs data outside, and 38, a printer and 40 are storage.

[0018] Although mentioned later for details, in this example, the input equalization circuit 26 controls the focus of the image pick-up circuit 10, and exposure automatically to 1 or two or more fields which are specified by the adjustment zone-control circuit 28, and the image-processing circuit 12 carries out regulating automatically of the white balance to 1 or two or more fields which are specified by the adjustment zone-control circuit 28.

[0019] The fundamental image input operation of this example is explained briefly. After the image-processing circuit 12 carries out A/D conversion of the output picture signal of the image pick-up circuit 10, it performs color adjustment and various kinds of filtering, and stores them in memory 14. The image output circuit 16 reads the image data stored in memory 14 in predetermined sequence, and outputs it to monitor 34 grade.

[0020] A user specifies 1 or two or more logging fields of a photography image with an operating set 24. For example, a user starts on the monitor display which displays the whole photography image, and specifies the range. By making this appointed range into a frame signal, logging directions / field control circuit 22 is impressed to a monitor 33, and indicates by superposition on a display image while it directs activation of logging processing of the specified range in the image logging circuit 18 according to the input of the range assignment signal from an operating set 24. The image logging circuit 18 reads the image data of the specified range from memory 14, and supplies it to the logging image output circuit 20. In a predetermined format, through the transmission communication device 36, output outside, a printout is carried out by the printer 38, or the logging image output circuit 20 stores the image data from the image logging circuit 18 in storage 40. That is, the image cut down by the image logging circuit 18 receives different processing from the remaining image with which it is not started of the one screen.

[0021] As for logging of an image, all of intermittent ** of a continuation screen and predetermined screen spacing can perform only one screen. Next two are used for a monitor display, dynamic-image transmission, etc. of a dynamic image, and logging of only one screen is used for a printed output, file are recording, etc. Processing of the whole image by the image output circuit 16 and processing of the logging image by the image logging circuit 18 and the logging image output circuit 20 are performed mutually-independent.

[0022] The adjustment zone-control circuit 28 sets the conditions of input adjustment as a default (about ranging and photometry area of middle of the screen, and a white balance, it is [adjustment / a focus and / exposure] a full screen) to the input equalization circuit 26 and the image-processing circuit 12, when the control signal from logging directions / field control circuit 22 does not input. The input equalization circuit 26 adjusts the focus of the image pick-up circuit 10, and exposure on condition that a default, and the image-processing circuit 12 adjusts a white balance on condition that a default.

[0023] Logging directions / field control circuit 22 supplies the control signal which directs adjustment of the input condition about the specified range to the adjustment zone-control circuit 28, when it starts from an operating set 24 and there is assignment of the range again. The input equalization circuit 26 is ordered, and the image-processing circuit 12 is ordered the adjustment zone-control circuit 28 so that a white balance may be adjusted about the range by which logging assignment was carried out, so that a focus and exposure may be adjusted about the range by which logging assignment was carried out according to the control signal from logging directions / control circuit 22.

[0024] Drawing 2 shows the flow chart about input adjustment. The adjustment zone-control circuit 28 is monitoring the control signal from logging directions / field control circuit 22, and the control signal from the system control circuit 30 continuously (S1). When logging directions / field control circuit 22 is not directing logging of an image (S2) (the image logging circuit 18 is not performing logging processing), the adjustment zone-control circuit 28 Choose as object range of input adjustment of the input-screen whole region or the default field (for example, middle of the screen) appointed beforehand of the image pick-up circuit 10 (S3), a focus and exposure are made to adjust to the input equalization circuit 26, and a white balance is made to adjust to the image-processing circuit 12 (S5). On the other

hand, when logging of an image and its range are notified from logging directions / field control circuit 22 (S2), choose the adjustment zone-control circuit 28 as object range of input adjustment of the image range specified by logging directions / field control circuit 22 among the input-screen whole region of the image pick-up circuit 10, it makes a focus and exposure adjust to (S4) and the input equalization circuit 26, and makes a white balance adjust to the image-processing circuit 12 (S5).

[0025] Thus, in this example, in usually passing, performing optimal input adjustment to a full screen, when the whole screen is being used for various applications, and starting a part, it performs optimal input adjustment to the logging field. The optimal logging image is obtained without an operator being conscious of complicated actuation by this. That is, the logging image with which optimal input adjustment was performed can obtain, and the efficient high image input of operability can realize, without being able to prevent cutting down bad images, such as brightness and color balance, the image which is not to the point and which faded, and outputting as an image, and needing troublesome hand regulation, since various input adjustments are performed by making the logging image field into a coordination area when logging of image information is being performed.

[0026] In the above-mentioned example, observing the whole input image, since the logging image output circuit 20 which starts with the image output circuit 16 which outputs the whole input image, and outputs an image is provided, the logging range of an image can be specified and a logging image can be observed. Moreover, the appearance of the image outside the logging range by assignment of the logging range can also be checked.

[0027] However, if there is no need that the whole input image is observable, it is clear that the image output circuit 16 is omissible. Drawing 4 shows the outline configuration block Fig. of the modification example. The same sign is given to the same component as drawing 1. 32 is a logging field control circuit which controls a logging field to the image logging circuit 18 instead of logging directions / field control circuit 22. The logging field control circuit 32 orders a logging field the image logging circuit 18 and the adjustment zone-control circuit 28 according to actuation of the operating set 24 by the operator. When an operator does not input logging of an image with an operating set 24, the logging field control circuit 32 starts the whole input image or a default field, and orders the image logging circuit 18 and the adjustment zone-control circuit 28 it as a field.

[0028] This invention is not limited to a focus, a diaphragm, and a white balance as an adjustment element of an input image. It is applicable also to the vibrationproofing actuation using memory. It may be made to carry out input adjustment of the element which is different in each field by which logging assignment was carried out, and whether input adjustment is carried out may specify any element according to an individual in the field by which logging assignment was carried out.

[0029]

[Effect of the Invention] Since various kinds of input adjustments are performed to a logging field according to this invention when cutting down an input image so that he can understand easily from the above explanation, the logging image to which suitable input adjustment (one [for example,] or more of focus control, exposure adjustment, and the color adjustments) was performed without the need of making troublesome actuation giving an operator can be obtained.

[Translation done.]

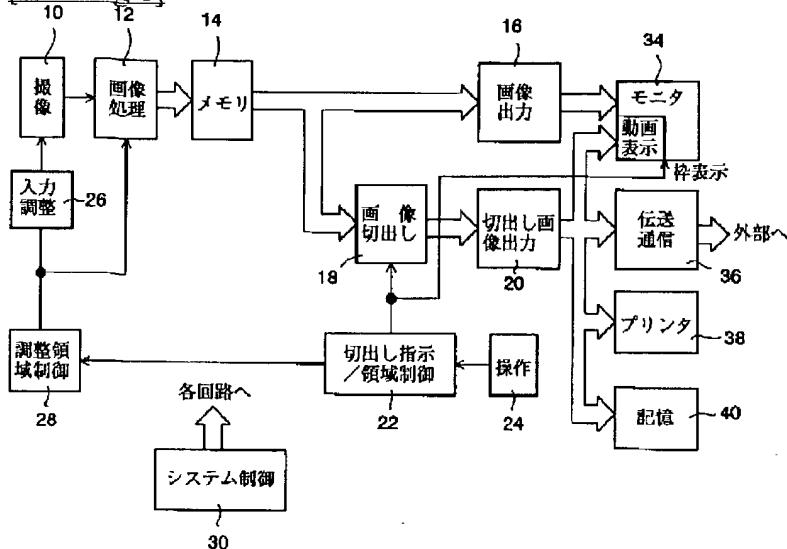
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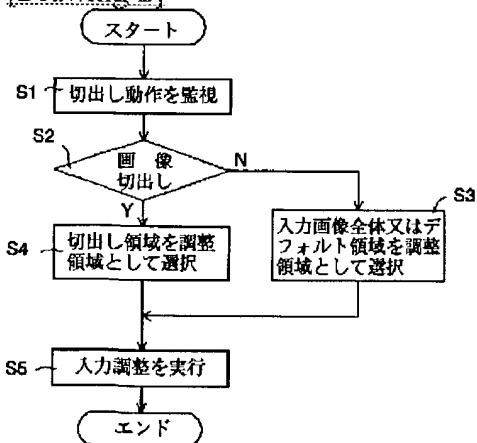
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DRAWINGS

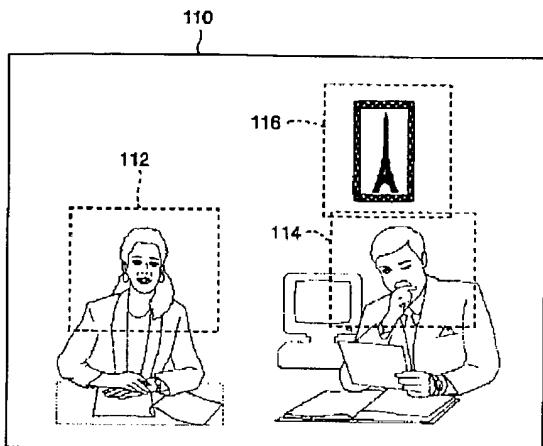
[Drawing 1]



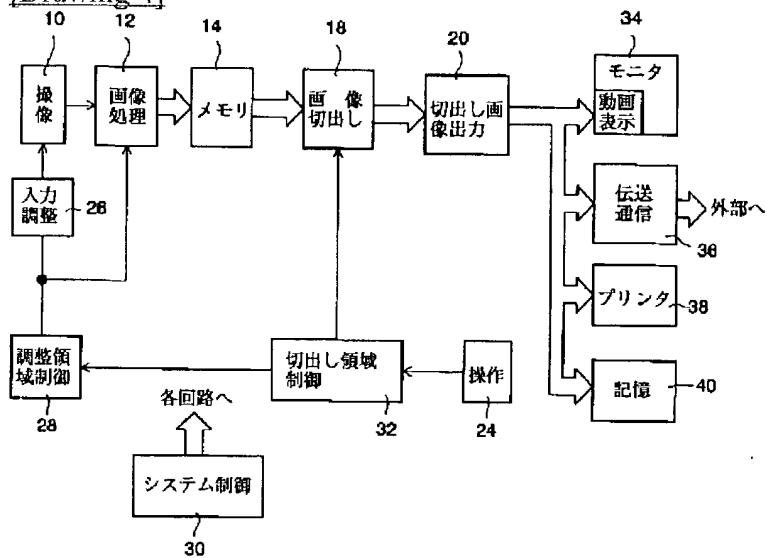
[Drawing 2]



[Drawing 3]



[Drawing 3]



[Translation done.]